UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,732	01/19/2005	Li-Qun Xu	36-1883	6894

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

		Application No.	Applicant(s)
Office Action Summary		10/521,732	XU ET AL.
		Examiner	Art Unit
		Melissa J. Berman	2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *7/7/2005*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This action is responsive to application 10/521732 filed on 1/19/2005. Claims 1-10 have been examined.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 02255067.7, filed on 7/19/2002.

Claim Objections

Claims 8 and 9 are objected to because of the following informalities:

- Claim 8 contains material inherent to claim 1. The "concatenating" of features already occurs in the combining step of claim 1. It is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

- Claim 9 is missing a period at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is useful, tangible and concrete. If the claim is directed to a practical application of the §101 judicial exceptions producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. §101.

The claims are a manipulation of abstract concepts and are not clear in purpose or scope. Variations on the phrases in the claims, such as 'respective portions of the training set' do not provide a clear purpose or scope for the claimed invention.

The invention must be for a practical application and either:

      1) specify transforming (physical thing - article) or

      2) have the Final Result (not the steps) achieve or produce a

          useful (specific, substantial, AND credible),

          concrete (substantially repeatable/non-unpredictable), AND

          tangible (real world/non-abstract) result

          (tangibility is the opposite of abstractness).

Claims that assemble data structures, such as vectors or models, are not statutory without a final output that is useful, concrete, and tangible. Claims 1, and 9 are manipulating and organizing data into data structures. The data structures are not output or used to create an output to a user. Claim 1 also recites in the preamble "a method of generating class models ..." however does not fulfill its claimed use. Claim 1 concludes with using feature vectors to train a class model, not generate a class model. Claims 2 and 10 also appear to be merely manipulating data

structures. Although claims 2 and 10 'identify' a class, there is no tangible output associated with

this identification. Claims that further combine data are still not statutory.

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by **Gibbon**

et al. (Pub No.2004/0078188) hereafter referred to as Gibbon.

Claim 1, 8, 9

Gibbon disclosed a method of generating class models of semantically (see e.g., [0005])

classifiable data of known classes, comprising the steps of:

for each known class (audio, see e.g. [0030]; [0038]-[0039]):

extracting a plurality of sets of characteristic feature vectors (volume, zero

crossing rate, pitch period, feature extraction, see e.g., [0009]; [0037]; [0039]; [0038]-

[0080])) from respective portions of a training set of semantically classifiable data of one

of the known classes (training vectors, see e.g., [0081-0083]); and

combining the plurality of sets of characteristic features into a respective plurality

of N-dimensional feature vectors specific to the known class ("feature vector contains 14

chip [sic] level", see e.g., [0081]-[0083], especially where "level" is the dimension);

wherein respective pluralities of N-dimensional feature vectors are thus obtained for each

known class ("feature vector contains 14 chip [sic] level", see e.g., [0081]-[0083], especially

where "level" is the dimension); the method further comprising:

analysing the pluralities of N-dimensional feature vectors for each known class to

generate a set of M basis vectors (target speaker, background speakers and other

background audio categories, see e.g., [0094]), each being of N-dimensions, wherein M

<< N (mixtures, see e.g., [0094]); and

for any particular one of the known classes:

using the set of M basis vectors, mapping each N-dimensional feature

vector relating to the particular one of the known classes into a respective M-

dimensional feature vector (see e.g., [0094], EN: where the audio categories are

represented by 64 mixture component Gaussian Mixture Model (GMM) is the M-

dimensional feature vector, which is inherently mapped from a basis and feature

vector); and

using the M-dimensional feature vectors thus obtained as the basis for or

as input to train a class model of the particular one of the known classes

(evaluated from models, training models, see e.g., [0084]; [0094]).

Claim 2, 10

Gibbon disclosed a method of identifying the semantic class of a set of semantically classifiable data, comprising the steps of:

extracting a plurality of sets of characteristic feature vectors from respective portions of the set of semantically classifiable data (volume, zero crossing rate, pitch period, see e.g., [0038]-[0080]));

combining the plurality of sets of characteristic features into a respective plurality of N-dimensional feature vectors; mapping each N-dimensional feature vector to a respective M-dimensional feature vector, using a set of M basis vectors previously stored, wherein M << N ("feature vector contains 14 chip [sic] level", see e.g., [0081]-[0083], especially where "level" is the dimension);

comparing the M-dimensional feature vectors with stored class models respectively corresponding to previously identified semantic classes of data (anchor's speech, detailed reporting, commercials, see e.g., [0089]-[0094], especially [0094] where models are used in target speaker detection; and [0097], where the data is classified into audio events such as anchor's speech, detailed reporting, etc.);

and identifying as the semantic class that class which corresponds to the class model which most matched the M-dimensional feature vectors (anchor's speech, detailed reporting, commercials, see e.g., [0097], where the data is classified into audio events such as anchor's speech, detailed reporting, etc.).

Claim 3

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable

data is audio data (audio, see e.g., [0005]-[0008]; [0038]).

Claim 4

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable

data is visual data (visual, see e.g., [0036]).

Claim 5

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable

data contains audio and visual data (see e.g., [0036]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gibbon** as

applied to claim 1-5 and 8-10 above, and further in view of **Baudat et al.** ("Generalized

Discriminant Analysis Using a Kernel Approach", 2000) hereafter referred to as **Baudat.**

Claim 6

Gibbon does not specifically disclose a method according to claim 1, wherein the analysing step

uses Principal Component Analysis (PCA).

However, **Baudat** teaches a method according to claim 1, wherein the analysing step uses Principal Component Analysis (PCA) (principal component analysis, see e.g., "1. Introduction"; "5.2 Fisher's Iris Data").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of **Gibbon** with **Baudat**. One would have been motivated to do so because principal component analysis reduces a multidimensional data set to lower dimensions, making the set more feasible to analyze.

Claim 7

Gibbon does not specifically disclose a method according to claim 1, wherein the analyzing step uses Kernel Discriminant Analysis (KDA).

However **Baudat** teaches a method according to claim 1, wherein the analyzing step uses Kernel Discriminant Analysis (KDA) (see e.g., "3. GDA Formulation in feature space"; "Eigenvalue resolution"; "5.3 Seed Classification" where the generalized discriminant analysis (GDA) employs Gaussian kernel, EN: The GDA uses a kernel approach and although is different in name, it is functionally equivalent).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of **Gibbon** with **Baudat**. One would have been motivated to do so because the GDA with kernels reduces a multidimensional data set to lower dimensions, making the set more feasible to analyze without generalizing the data. The final result will be an exact solution instead of an approximate optimization (**Baudat**).

Conclusion

The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

- Zhang et al (Pub No. 2002/0165837)

- Foote (Patent No. 6542869)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Berman whose telephone number is 571-270-1393. The examiner can normally be reached on 9/4/5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Melissa Berman

MB

DAVID VINCENT 6/5/07
SUPERVISORY PATENT EXAMINER